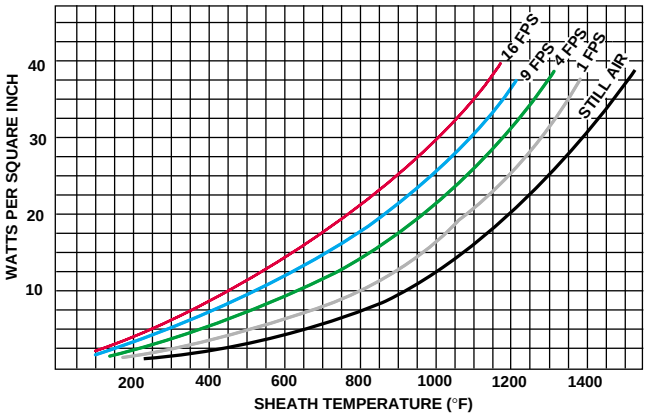
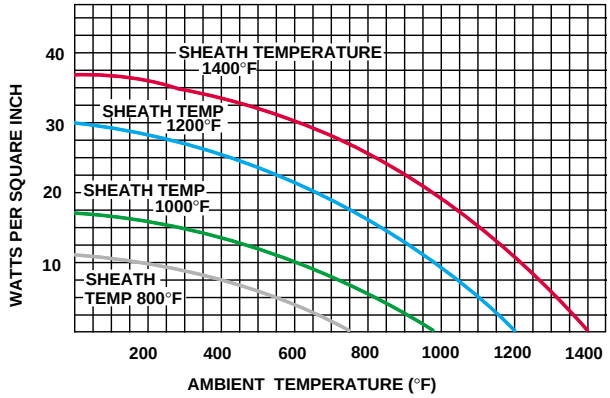
SHEATH TEMPERATURES RELATIVE TO WATT DENSITY

12T: Sheath Temperature of Tubular Elements at Various Watt Densities in Free or Forced Air at 80°F.

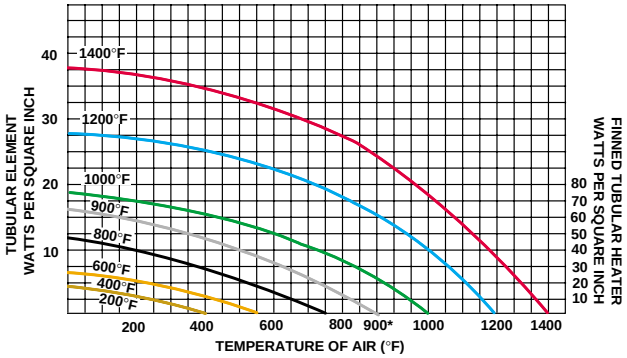


13T: Sheath Temperatures of Tubular Elements Clamped to a Surface at Various Ambient Temperatures and Watt Densities



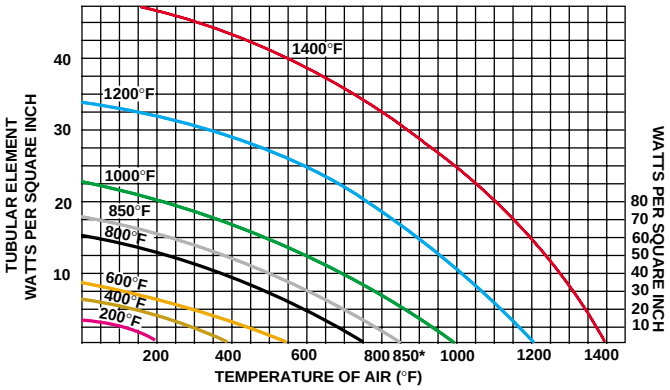
$$\text{AMBIENT TEMPERATURE} = \frac{\text{Sheath Temperature} + \text{Temperature at Process (Work)}}{2}$$

14T: Allowable Watt Density of Tubular Elements Operating at 800° to 1400°F Sheath Temperature for Various Temperatures in Distributed Air Velocity of 1 Fps.



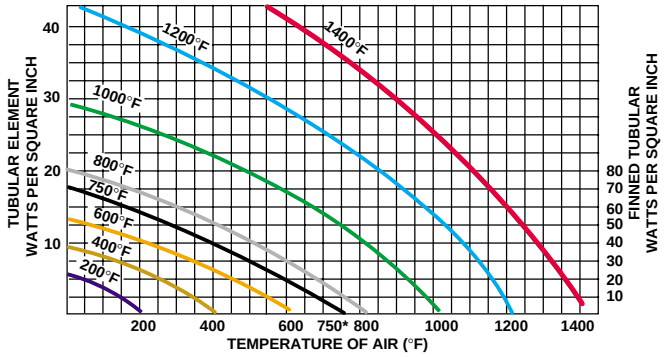
*FINNED TUBULAR HEATER LIMIT (STEEL SHEATH AND FINS)

15T: Allowable Watt Density of Tubular Elements Operating at 800° to 1400°F Sheath Temperature for Various Temperatures in Distributed Air Velocity of 4 Fps.



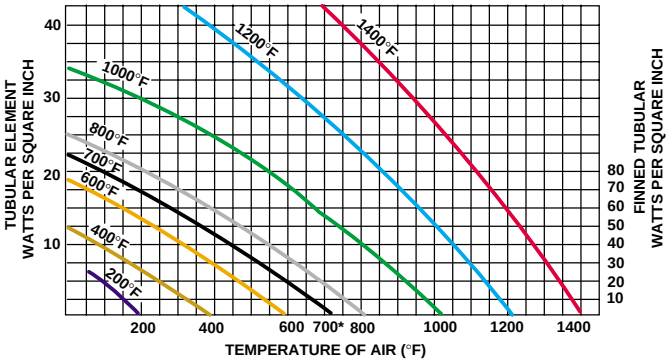
*FINNED TUBULAR HEATER LIMIT (STEEL SHEATH AND FINS)

16T: Allowable Watt Density of Tubular Elements Operating at 800° to1400°F Sheath Temperature for Various Temperatures in Distributed Air Velocity of 9 Fps.



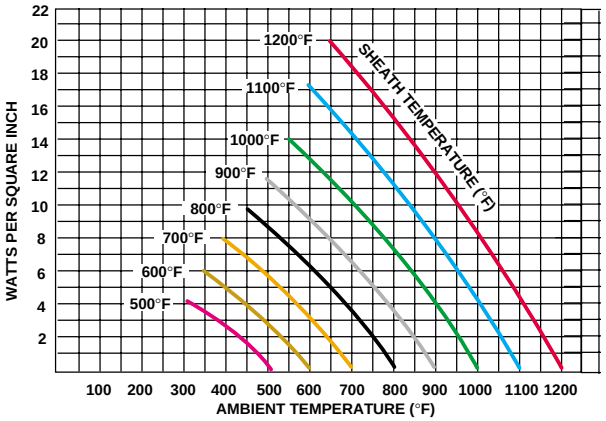
*FINNED TUBULAR HEATER LIMIT (STEEL SHEATH AND FINS)

17T: Allowable Watt Density of Tubular Elements Operating at 800° to 1400°F Sheath Temperature for Various Temperatures in Distributed Air Velocity of 16 Fps.



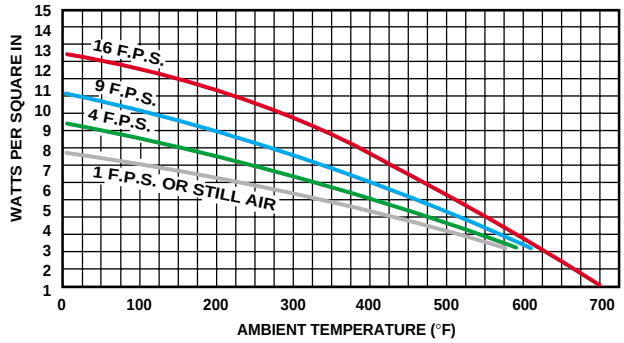
*FINNED TUBULAR HEATER LIMIT (STEEL SHEATH AND FINS)

18T: Sheath Temperature of HD Strip Heaters Clamped to a Surface at Various Ambient Temperatures and Watt Densities[1]

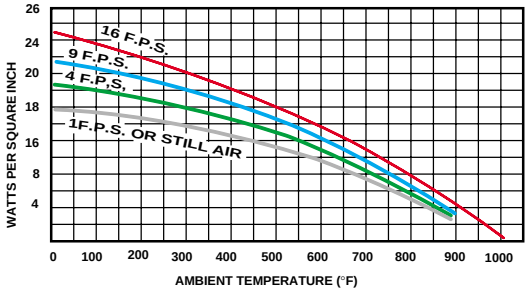


$$\text{AMBIENT TEMPERATURE} = \frac{\text{Sheath Temperature} + \text{Temperature at Process (Work)}}{2}$$

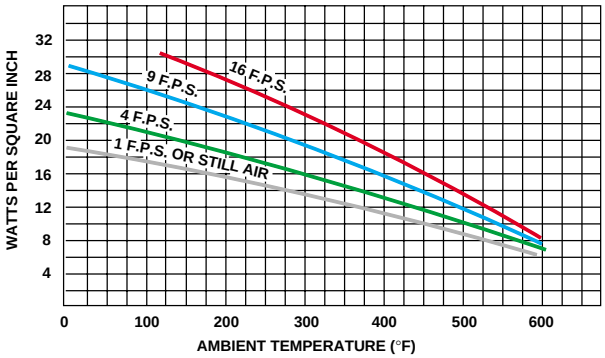
19T: Allowable Watt Density of HD Strip Heaters to Produce 700°F Sheath Temperatures at Various Ambient Temperatures and Air Velocities[2]



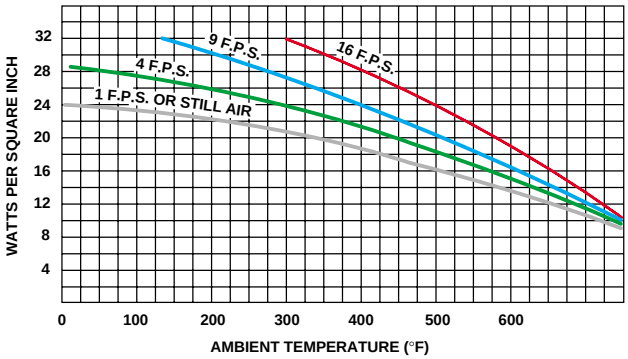
20T: Allowable Watt Density of HD Strip Heaters to Produce 1000°F Sheath Temperatures at Various Ambient Temperatures and Air Velocities. Use Stainless Steel Sheath Material[2]



21T: Allowable Watt Density of Finned HD Strip Heaters to Produce 600° to 700°F Sheath Temperatures at Various Ambient Temperatures and Air Velocities[2]

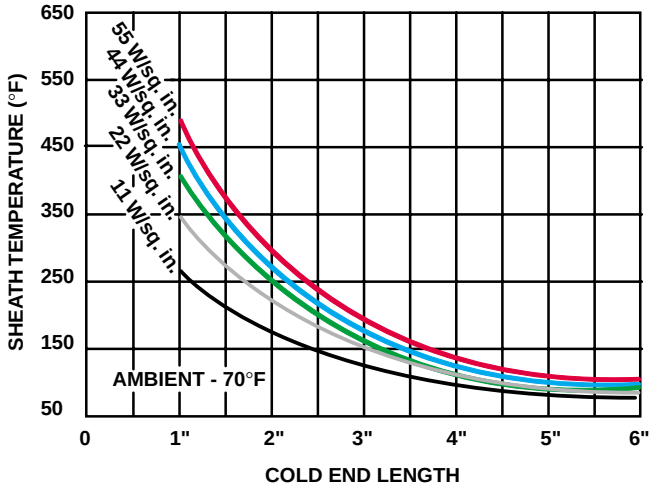


22T: Allowable Watt Density of Finned HD Strip Heaters to Produce 800° to 900°F Sheath Temperatures at Various Ambient Temperatures and Air Velocities[1,2]

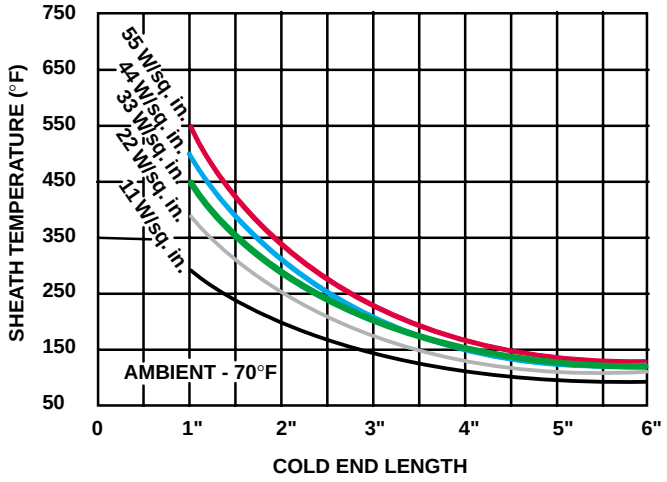


1. Use stainless steel materials (and fins) over 750°F sheath temperatures.
2. Where element spacing is close, use 80% of values.

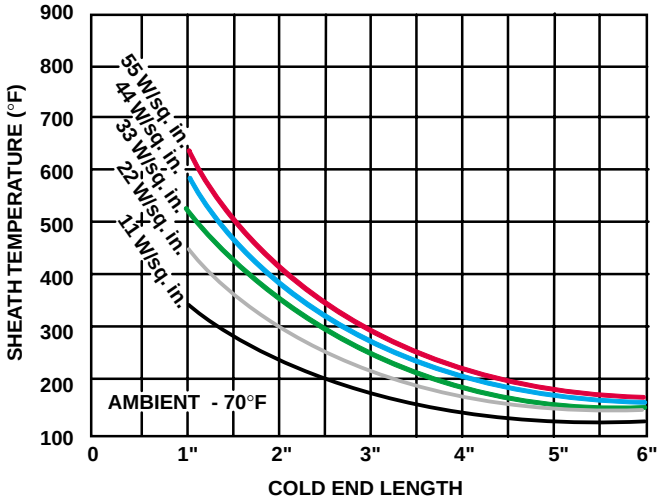
22A: Sheath Temperature vs Cold End –. 25” Diameter Tubular



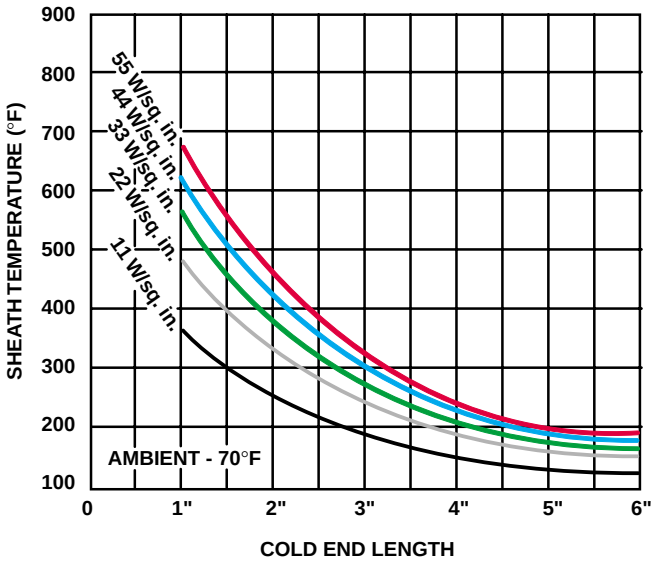
22B: Sheath Temperature vs Cold End – .312” Diameter Tubular



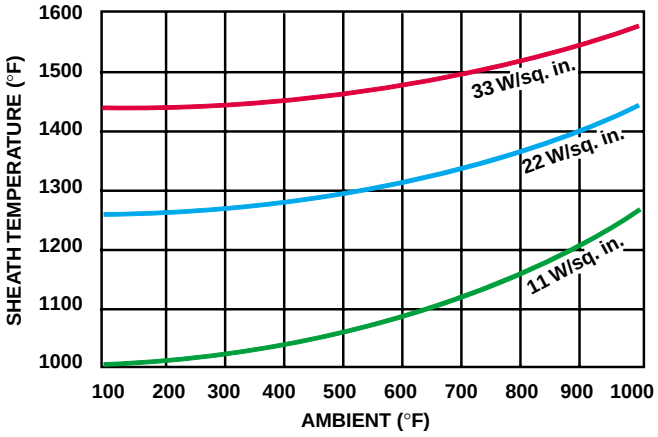
22C: Sheath Temperature vs Cold End – .430” Diameter Tubular



22D: Sheath Temperature vs Cold End – .475”/.490” Diameter Tubular



22E: Sheath Temperature vs Ambient Temperature in a Vacuum – .430” Diameter Tubular



22F: Tubular Heater Sheath Temperatures Operating in Different ambient temperatures at various watt densities.